Radiation Physics and Chemistry 2003 vol.68 N3-4, pages 619-621

Study of ultra-thin Al films deposited on GaAs(100) using positron annihilation induced auger electron spectroscopy and electron induced auger electron spectroscopy

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Abstract

We report study of the stability of ultra-thin Al films deposited on GaAs(100) using positron annihilation induced Auger electron spectroscopy (PAES). After the sample was kept for 7 days at 300 K under UHV conditions, the normalized Al PAES intensity decreased by 33.7±4.6%. Over the same time period, the normalized Ga PAES intensity increased by 55.8±4.8%. PAES spectra provide a direct method of confirming the substitution of Ga for Al in the top layer and Ga diffuse into the Al overlayer faster than As.

http://dx.doi.org/10.1016/S0969-806X(03)00243-3

Keywords

Annihilation, Auger, Interdiffusion, Metal thin film, Positron, Semiconductor